WEST Search History

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DATE: Wednesday, November 09, 2005

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	DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI; PLUR=YES; OP=ADJ		
☐	L6	L5 and apoe4 and transgenic	42
☐	L5	435/455,463,320.1,325.ccls.	35986
☐	L4	L3 and apoe4	13
☐	L3	800/18,3,9,13,13,21,22.ccls.	1798
☐	L2	apoe4 with transgenic	40
☐	L1	apoe4 near transgenic	8

END OF SEARCH HISTORY

(FILE 'HOME' ENTERED AT 16:24:28 ON 09 NOV 2005)

FILE 'CAPLUS, MEDLINE, EMBASE, BIOSIS, LIFESCI' ENTERED AT 16:24:36 ON 09 NOV 2005

L1	85	S APOE4 WITH TRANSGENIC
L2	11	S L1 AND (THR OR ARG OR THREONINE OR ARGININE)
L3	4	DUP REM L2 (7 DUPLICATES REMOVED)
L4	4	S L1 AND 61
L5	1	DUP REM L4 (3 DUPLICATES REMOVED)
L6	78	S L1 AND HUMAN
L7	31	S L6 AND PY<=2001
L8	14	DUP REM L7 (17 DUPLICATES REMOVED)
L9	938	S WEISGRABER K?/AU
L10	11	S L1 AND L2
L11	0	S L9 AND L1
L12	205	S L9 AND APOE4
L13	12	S L12 AND TRANSGEN?
L14	4	DUP REM L13 (8 DUPLICATES REMOVED)
L15	1217	S FARESE R?/AU
L16	8	S L15 AND APOE4
L17	4	DUP REM L16 (4 DUPLICATES REMOVED)
L18	39	S RAFFAI RO?/AU
L19	13	S L18 AND APOE4
L20	6	DUP REM L19 (7 DUPLICATES REMOVED)
L21	1900	S DONG LI?/AU
L22	21	S L21 AND APOE4
L23	10	DUP REM L22 (11 DUPLICATES REMOVED)

1: Apoe apolipoprotein E [*Mus musculus*]

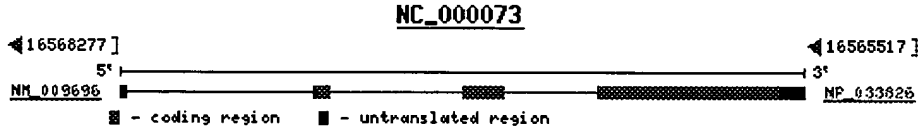
GeneID: 11816 Locus tag: MGI:88057 updated 06-Nov-2005

Summary

Official Symbol: Apoe **and Name:** apolipoprotein E **provided by** Mouse Genome Informatics
Gene type: protein coding
Gene name: Apoe
Gene description: apolipoprotein E
RefSeq status: Provisional
Organism: *Mus musculus*
Lineage: *Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Sciurognathi; Muroidea; Muridae; Murinae; Mus*
Gene aliases: AI255918

Genomic regions, transcripts, and products

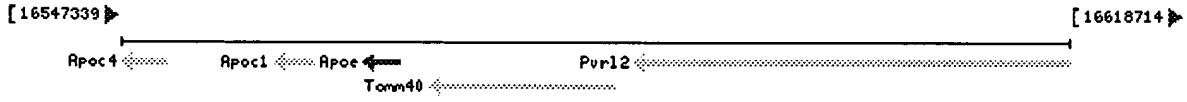
(minus strand) RefSeq below



Genomic context

See Apoe in MapViewer

chromosome: 7; **Locations:** 7 A2; 7 4.0 cM



Bibliography

Gene References into Function (GeneRIF): Submit

PubMed links

GeneRIFs:

1. Scarb1/apoE knockout mice have coronary heart disease not involving lymphocytes PubMed
2. ApoE mediates the presentation of serum-borne lipid antigens and can be secreted by antigen presenting cells as a mechanism to survey the local environment to capture antigens or to transfer microbial lipids from infected cells to bystander APCs PubMed

Entrez Gene

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UniSTS
Ensembl
Evidence Viewer
Gene Expression Data
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3. ApoE4 mice develop a constellation of changes that mimic the pathology associated with human age-related macular degeneration PubMed

4. protein engineering studies show that a destabilized conformation promotes apoE4 lipid binding PubMed

5. additive effects of apoE and clusterin on influencing amyloid-beta deposition PubMed

6. A cholesterol-independent role of apolipoprotein E in atherosclerosis regression is critical for lipid removal from the fibrotic component of the plaque but not from the foam cell-rich layer beneath the endothelium. PubMed

7. Human CRP transgene expression is thus up-regulated in apoE-deficient mice, apparently reflecting altered estrogen levels, despite the absence of other systemic signs of inflammation PubMed

8. In addition to the effect of apoE on lipid trafficking, apoE may also influence the astroglial response to damage PubMed

9. Chronic renal failure aggravates atherosclerosis in apoE(-/-) mice. PubMed

10. ApoE has a physiologic role as a regulator of osteoblast function PubMed

11. Effects of a standardized freeze-dried powder made from fresh grapes on the development of atherosclerotic lesions in apolipoprotein E deficient mice. PubMed

12. Increased atherosclerosis is accompanied by increases in VCAM-1 and P-selectin levels in the two apoE(-/-) mouse strains, the high HDL level may protect against atherosclerosis by inhibiting the expression of adhesion molecules in BALB/c.apoE(-/-) mice. PubMed

13. autoregulation of the LXRalpha gene facilitates induction of apoE in mouse adipose tissue PubMed

14. important in HSV-1 colonization of ovaries PubMed

15. In a mouse model of restenosis, a subphysiological level of apoE was associated with beneficial effects on lesion size/composition. ApoE has a generally important protective function in the arterial wall. PubMed

16. Results indicate that adipose tissue expression of apolipoprotein E is modulated by physiologic regulators of insulin sensitivity. PubMed

17. Improvement in insulin resistance induced by a high-fat diet, in apoe knockout mice of vasculopathy. did not alter plaque composition, PubMed

18. activation of extracellular signal-regulated kinase has a role in increasing tau phosphorylation in apolipoprotein E4 transgenic mice PubMed

19. Deficiency of apoE protein in macrophages attenuates the ingestion of apoptotic cells in vitro and results in impaired clearance of apoptotic cell remnants and a functionally relevant systemic proinflammatory condition in vivo. PubMed

20. Intravital microscopy of the common carotid artery revealed a significantly greater number of leukocytes rolling on the vessel walls in apoE-/-pGI receptor-/- mice. PubMed

21. The apoE4 isoform of apolipoprotein E (apoE), which is the major genetic risk factor of Alzheimer disease. PubMed

22. plays a significant role in host defense against candidiasis. PubMed

23. Review. This review will examine our present understanding of the pathology and progression of plaques in Apo-E-deficienct mice and highlight some of the nutritional, pharmacological, and genetic studies that have enhanced this understanding. PubMed

24. ApoE3 has a role in liver expression of fatty acid binding protein, as shown in transgenic mice models PubMed

25. apoE metabolism requires ABCA1 protein in the central nervous system PubMed

26. Results describe the relative roles of apolipoprotein E isoforms in low density lipoprotein receptor (LDLR)- and non-LDLR-mediated very low density lipoprotein (VLDL) clearance. PubMed

27. The accelerated renal injury that was observed in diabetic apo E-KO mice was attenuated by approaches that inhibit renal AGE accumulation. PubMed

28. serum chemokine levels are potential markers for atherosclerosis susceptibility in C3H and C57BL apoE(-/-) mice fed on a normal rodent diet PubMed
29. uremia markedly accelerates atherogenesis in apolipoprotein E-deficient mice. PubMed
30. Results show that alterations in DNA methylation profiles are early markers of atherosclerosis in an apolipoprotein E-null mouse model and may play a causative role in atherogenesis. PubMed
31. Knockout mice are at risk for cognitive deficits. PubMed
32. Apolipoprotein E promotes astrocyte colocalization and degradation of deposited amyloid-beta peptides. PubMed
33. After sirolimus treatment, the cholesterol content of the aortic arch was reduced in apoe knockout mice compared to normal controls. PubMed
34. estradiol facilitates neurite growth through an ApoE-dependent mechanism. PubMed
35. Low plasma apoE (1-3 x 10(-8) M) suppresses atherosclerosis by as yet undefined mechanisms, not dependent on the presence of apoA-I or HDL or an increased capacity of serum acceptors for Free Cholesterol efflux PubMed
36. ApoE deficient mice had significantly increased lymphocyte proliferation responses to both myelin antigens and mitogens and significantly more infiltrating lesions in the central nervous system (CNS) in histopathology PubMed
37. generation and characterization of two transgenic mouse lines expressing human ApoE2 in neurons and glial cells PubMed
38. use of a model of conditional gene repair to examine metabolism PubMed
39. Conditional disruption of the peroxisome proliferator-activated receptor gamma gene in mice results in lowered expression of ABCA1, ABCG1, and apoE in macrophages and reduced cholesterol efflux. PubMed
40. modulating transport of polyunsaturated phospholipid molecular species in synaptic plasma membranes. PubMed
41. Results identify the cyclooxygenase-2 gene as a target of APOE signaling, link HDL and APOE to prostacyclin receptor IP action, and describe a potential new basis for the cardioprotective effect of HDL and APOE. PubMed
42. ApoE normally associates with acetylcholinesterase in the synaptic cleft of slow muscles, modulating the activity of the enzyme and therefore quantal size. PubMed
43. neuronal expression of apoE is regulated by a diffusible factor or factors released from astrocytes PubMed
44. impact of telomere attrition on atherogenesis induced by dietary cholesterol in apolipoprotein E (apoE)-deficient mice PubMed
45. In aged female apoE0/0 mice water maze performance was impaired with search strategies. In parallel, increased corticosterone concentrations were measured in apoE0/0 mice in response to novelty and during the circadian cycle. PubMed
46. Lack of both NPRA and apoE synergistically enhances cardiac hypertrophy, suggesting roles for Npr1 as well as Apoe in regulation of hypertrophic cell growth. PubMed
47. Results demonstrate that apoE4-202 functions even in the presence of clearance-defective apoE2. PubMed
48. isoform-specific role in mediating the systemic and brain inflammatory responses PubMed
49. TR4 can also regulate apolipoprotein E, C-I, and C-II gene expression via the TR4 response element within the hepatic control region PubMed
50. Brain regional differences in the production of apoE throughout the estrous cycle were noted. Exogenous estradiol has regionally specific effects on apoE expression. Regional variability appears to vary as a function of the estrogen receptor subtype PubMed
51. role in Alzheimer's disease-like neurodegeneration and behavioral deficits in transgenic mice PubMed
52. apoE inhibits cell migration via cAMP-dependent protein kinase A activation as a consequence of its binding to LRP-1 PubMed

53. After adoptive regulatory T cells type 1 transfer in female apolipoprotein E-knockout mice, developing atherosclerotic plaques had fewer macrophages and T cells than plaques of control mice PubMed

54. apoE deficiency in apoE knockout mice leads to a deficit in olfactory function, suggesting an important role for apoE in the olfactory system PubMed

55. ApoE(-/-)/IL-4(-/-) mice showed a 58% and 64% decrease in disease in aortic arch compared to apoE(-/- and apoE(-/-)/IL-12(-/-) mice, respectively, and a 78% decrease in thoracic lesions compared to apoE(-/-)/IL-12(-/-). PubMed

56. Apolipoprotein E facilitates cerebral amyloid angiopathy and spontaneous hemorrhage in amyloid precursor protein transgenic mice. PubMed

57. ApoB-48 and apoB-100 differentially influence the expression of type-III hyperlipoproteinemia in APOE*2 mice PubMed

58. adrenal gland cholesterol metabolism in apolipoprotein E deficient mice PubMed

59. lack of lipoprotein receptor-related protein 5 and apolipoprotein E is seen in severe hypercholesterolemia, impaired fat tolerance, and advanced atherosclerosis PubMed

60. recycling of apolipoprotein E in primary cultures of mouse hepatocytes PubMed

61. Following complete spinal cord transection Apo-E is upregulated in neutrophils and macrophages at the injury site and is found at later times in astrocytes during remodeling of white matter tracts, notably in degenerating parts of the fasciculus gracilis. PubMed

62. Apolipoprotein E deficiency promotes increased oxidative stress and compensatory increases in antioxidants in brain tissue. PubMed

63. The increase in apoE expression closely correlated in time and spatial distribution with axonal and neuronal degeneration, consistent with a role as an 'injury-response' protein. PubMed

64. Transgenic mice deficient in apoE display altered levels of mature amyloid precursor protein (APP) as well as increased amounts of both beta-cleaved C-terminal fragments and Abeta peptides. PubMed

65. Mice lacking apoE appear not to be impaired in spatial memory per se but are deficient in a procedural component of the Morris water maze. PubMed

66. The effect of angiotensin II on arterial wall stiffness in apolipoprotein E knockout mice. PubMed

67. involvement of ApoE in the hematogenous route of HSV-1 to the CNS PubMed

68. Peroxisome proliferator-activated receptor alpha,gamma coagonist LY465608 inhibits macrophage activation and atherosclerosis in apolipoprotein E knockout mice PubMed

69. in null mice, blockade of platelet-derived growth factor or its receptors transiently delays but does not prevent fibrous cap formation PubMed

70. The data indicate a neuroprotective role for estrogen in global ischemia, the mechanism of which is apoE-dependent PubMed

71. regulated expression of gene cluster in macrophages PubMed

72. regulation of macrophage ApoE expression and processing by extracellular matrix PubMed

73. helps maintain blood brain barrier; of particular importance after brain injury PubMed

74. Apolipoprotein E4 potentiates amyloid beta peptide-induced lysosomal leakage and apoptosis in neuronal cells PubMed

75. Reconstituted discoidal ApoE-phospholipid particles are ligands for the scavenger receptor BI PubMed

76. ApoE affects the age of onset of Abeta deposition in amyloid precursor protein transgenic mice as well as the level, structure and anatomic distribution of brain Abeta deposits. PubMed

77. Apo-E knockout middle cerebral artery occlusion mice showed a worsened deficit in locomotor activity, which was significantly correlated with exacerbated cortical lesion volume PubMed

Alleles

The following allele types are documented at Mouse Genome Informatics (MGI)

- Targeted (knock-in) (1) PubMed
- Targeted (knock-out) (3) PubMed

General gene information

Markers

Apoe(e-PCR) (Links: UniSTS: 141112)
Alternate name: MGI:1205863
AI255918(e-PCR) (Links: UniSTS: 179533)
Alternate name: 392587
PMC186328P2(e-PCR) (Links: UniSTS: 271700)

GeneOntology

Provided by MGI

Function	**Evidence**	
heparin binding	IEA	
lipid binding	IEA	
lipid transporter activity	IEA	
lipoprotein binding	IDA	PubMed
Process		
cholesterol homeostasis	IMP	PubMed
cholesterol metabolism	IMP	PubMed
lipid transport	IEA	
lipoprotein metabolism	IEA	
response to oxidative stress	IMP	PubMed
transport	IEA	
Component		
chylomicron	IEA	
extracellular region	IEA	
extracellular space	RCA	PubMed

Homology:
Human, Rat
Map Viewer

Pathways

KEGG pathway: Alzheimer's disease 05010
KEGG pathway: Neurodegenerative Disorders 01510

General protein information

Name: apolipoprotein E

NCBI Reference Sequences (RefSeq)

mRNA Sequence NM_009696
Source Sequence BC028816
Product NP_033826 apolipoprotein E
Conserved Domains (1) summary
pfam01442: Apolipoprotein; Apolipoprotein A1/A4/E family

Location: 33 - 276 Blast Score: 604

Related Sequences

Nucleotide		Protein	Strain
Genomic	D00466	BAA00361	BALB/c
mRNA	AK010261	None	C57BL/6J
mRNA	AK019319	None	C57BL/6J
mRNA	AK075843	BAC36000	C57BL/6J
mRNA	AK131624	None	C57BL/6J
mRNA	AK134921	BAE22338	C57BL/6J
mRNA	AK148747	None	C57BL/6J
mRNA	AK149111	BAE28740	C57BL/6J
mRNA	AK149568	BAE28964	C57BL/6J
mRNA	AK150834	BAE29894	C57BL/6J
mRNA	AK159105	BAE34821	C57BL/6J
mRNA	AK159424	BAE35071	C57BL/6J
mRNA	AK159517	BAE35147	C57BL/6J
mRNA	BC028816	AAH28816	FVB/N
mRNA	BC044785	None	FVB/N
mRNA	BC083351	AAH83351	C57BL/6
mRNA	CT010212	CAJ18420	
mRNA	CT010356	CAJ18564	
mRNA	M12414	AAA37251	
mRNA	M73490	AAA37252	C57BL/6J
	None	P08226	

Additional Links

UniGene Mm.305152
Gene Expression Database (GXD) at MGI MGI:88057

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Symbol Name ID	**Tg(GFAP-APOE4) 1Hol** **transgene insertion 1, David M Holtzman** MGI:3057183 Nomenclature History
Genetic Map	Chromosome Unknown
Phenotypes	All phenotypic alleles(1) : Transgenic(1)
References	J:93487 Sun Y *et al.*, "Glial fibrillary acidic protein-apolipoprotein E (apoE) transgenic mice: astrocyte-specific expression and differing biological effects of astrocyte-secreted apoE3 and apoE4 lipoproteins." J Neurosci 1998 May 1;18(9):3261-72 All references(1)

last database update
11/07/2005
MGI 3.4